

Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1700
Application No. 09/763,135
Paper Dated: November 20, 2003
In Reply to USPTO Correspondence of July 1, 2003
Attorney Docket No. 3848-010270

REMARKS

The Office Action of July 1, 2003 has been reviewed and the Examiner's comments carefully considered. A Response was filed on April 25, 2003 addressing the Examiner's rejections in the previous Office Action, dated December 27, 2002. The present Amendment amends independent claims 1 and 4 in accordance with the originally-filed specification. Claims 1-10 remain in this application.

The Examiner continues to reject all of pending claims 1-10. Specifically, claims 1, 3, 4 and 7-10 stand rejected under 35 U.S.C. § 102(b) for anticipation by U.S. Patent No. 5,553,734 to Sharp. Further, claims 2 and 6 stand rejected under 35 U.S.C. § 103(a) for obviousness over the Sharp patent in view of U.S. Patent No. 4,510,019 to Bartelloni. Finally, claim 5 stands rejected under 35 U.S.C. § 103(a) for obviousness over the Sharp patent in view of U.S. Patent No. 5,090,586 to Mitchell. All of the Sharp patent, the Bartelloni patent and the Mitchell patent were cited by the Examiner in the previous Office Action.

Independent claim 1, as amended, is directed to an underground reservoir for storing liquid products. The underground reservoir consists of an inner, main reservoir and an outer, secondary reservoir consisting of a coating layer. The coating layer consists of an inner layer made from a paper material and an outer layer made of polyurethane.

Independent claim 4, as amended, is directed to a process for manufacturing an underground reservoir. This process includes the steps of providing an inner, main reservoir and covering an outer surface of the main reservoir with a first coating layer consisting of a paper material, and applying a second coating layer consisting of polyurethane over the first coating layer.

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As discussed in the previous Response, the Sharp patent is directed to a double-walled storage tank system having enhanced wall integrity. The tank of the Sharp patent has an inner wall of steel and an outer wall made of a fibrous-reinforced resinous coating layer. The coating layer has an inner layer of fibrous-reinforced material and an outer layer of polyurethane.

The Bartelloni patent is directed to latex containing papers. The Examiner continues to use the Bartelloni patent for its teaching of specialty paper applications, such as the use of latex papers as liquid-resistant papers for use in manufacturing coated papers and boards. The Examiner also asserts that the Bartelloni patent teaches that latex papers can be used in tank construction, alleging that polymeric materials added as latex confer on the paper impermeability, flexibility and resistance.

The Mitchell patent is directed to a dual wall tank. The Examiner continues to use the Mitchell patent for its teaching of the common surface preparation technique of abrasive blasting of the steel. The Examiner asserts that this is a well-known technique in the art.

The Sharp patent teaches an underground reservoir that is different in structure from the reservoir claimed in the present application. The Sharp patent suggests the use of a coating layer, which includes an inner layer made of a fibrous-reinforcing material and an outer layer made of polyurethane. However, the present invention is directed to an underground tank with an inner tank made from steel and an outer tank (or a layer that forms a tank) made of polyurethane. This outer tank does not include any fibrous-reinforcing material, as is specifically required by the Sharp patent. Instead, and according to the present invention, the polyurethane is the reinforcing material and does not require any viscosity adjustment to receive any reinforcing fibrous material. Again, Applicant respectfully submits that this is a substantial

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difference in the manufacturing method and allows the total thickness of the outer layer of the present invention to be made of polyurethane in the range of 2.5 to 3.5 mm. However, the Sharp patent discusses a layer having a total thickness of roughly 4 cm. See column 5, lines 18-19.

Referring to Fig. 11 of the Sharp patent, a system is disclosed that includes an inner storage tank 41, a resinous material 42 is applied to the tank 41. While still tacky, a strip of an array 43 is wound in a spiral pattern around the sidewall 44 and bonded to it. After this, a separating material 47 is preferably placed over the inner tank 41 in the area not covered by the arrays. This separating material 47 overlaps the array 43, 46. Such separating materials would be pliable or semi-rigid materials, such as polyurethane, polyacetate, foam, matting, corrugated cardboard, wax surface paper and other fibrous materials, which range from about .01 inch to almost .50 inch in thickness. Therefore, and as seen in Fig. 11, the resulting structure is very thick and comprises multiple layers.

The Sharp patent does not disclose a secondary reservoir having a coating layer, where the coating layer is formed by an inner layer made from a paper material and an outer layer made from polyurethane. Instead, the tank system of the Sharp patent includes the inner storage tank 41, a resinous layer 42, a strip of array 43, separating material 47 and the final continuous wall 48 of resinous material formed over the discrete array and separating materials. Therefore, the Sharp patent does not disclose an underground reservoir including an inner, main reservoir and including a coating layer, where the coating layer is formed by an inner layer made from a paper material and an outer layer made from polyurethane.

In paragraph 4 on page 2 of the final Office Action, the Examiner has responded to the arguments in Applicant's previous Response. In particular, the Examiner notes that the

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claims are written in open language, and “therefore, the claim limitation suggests that the outer layer is made from at least polyurethane, other materials can be present in the outer layer and still read on the claim.” Similarly, the Examiner asserts that merely stating that the outer wall of the tank of the present invention is covered by a polyurethane-based coating layer does not preclude adding the continuous wall of polyurethane to filament bundles. Again, the Examiner maintains that “Claim 1 and 4 refer to open language, in which the addition of layers between the layers mentioned is included in the scope of the claim.”

By the foregoing amendment, Applicant has narrowed independent claims 1 and 4 to restrict the structure and composition of the layers as set forth in independent claims 1 and 4. In particular, independent claim 1 is now directed to an underground reservoir consisting of an inner, main reservoir and an outer, secondary reservoir consisting of a coating layer. The coating layer consists of an inner layer made from a paper material and an outer layer made of polyurethane. The term “consisting of” is a closed term and is restrictive, thusly precluding the addition of other layers or materials to the layers and materials specifically set forth in this claim. Therefore, the “open language” has been removed from independent claim 1, which addresses the Examiner’s concerns detailed in the final Office Action.

Similarly, independent claim 4 has been amended and is now directed to a process for manufacturing an underground reservoir including the steps of providing an inner, main reservoir and covering an outer surface of the main reservoir with a first coating layer. The first coating layer consists of a paper material. Next, the process includes the step of applying a second coating layer consisting of polyurethane over the first coating layer. Again, as discussed above in connection with independent claim 1, the “open language” has been removed from this

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claim and the more restrictive "consisting of" language has been inserted.

Accordingly, the Sharp patent does not disclose an underground reservoir that includes only an inner, main reservoir and a coating layer, where the coating layer strictly consists of an inner layer made from a paper material and an outer layer made from polyurethane. The limitations are specifically set forth in independent claims 1 and 4 of the present invention. For the foregoing reasons, independent claims 1 and 4 are not anticipated by or rendered obvious over the Sharp patent. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Neither the Bartelloni patent nor the Mitchell patent overcome the deficiencies of the Sharp patent. Whether used alone or in combination, neither the Bartelloni patent nor the Mitchell patent disclose an underground reservoir having only an inner, main reservoir and including a coating layer, where the coating layer is formed strictly by an inner layer made from a paper material and an outer layer made from polyurethane, as disclosed in independent claims 1 and 4 of the present application. Therefore, independent claims 1 and 4 are not anticipated by or rendered obvious over the Bartelloni patent and the Mitchell patent. Reconsideration of the rejections of independent claims 1 and 4 is respectfully requested.

Also enclosed herewith and incorporated herein by reference is a Declaration from one of ordinary skill in the art further elucidating the distinguishing characteristics of the present invention with respect to the prior art of record and the state-of-the-art generally. In particular, Mr. Laércio Lopes Costa, a Brazilian citizen, has more than twenty years of experience in the field of equipment for gas stations and currently holds the position of General Secretary of the Brazilian Association of Manufacturing Industries of Equipment for Gas Stations and First

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Secretary of the Brazilian Association of Technical Norms of the Commission of Study for the Distribution and Storage of Fuel of the Brazilian Oil Institute. Mr. Costa believes that the polyurethane-coated jacketed tank has significant innovations as compared with the state-of-the-art in the building of fuel storage tanks that have secondary contention formed by a fiberglass reinforced plastic jacket. For example, the present invention does not require any added material to ensure the mechanical structure of the jacket building, as in the case of the fiberglass reinforced plastic jacket, which only manages to have a structure by adding the roving or fiberglass blanket. The present invention shows improved impact strength, since it is an elastomer with high flexibility properties and mechanical strength, which translates into greater safety in the transportation and insulation of the tank. The tank of the present invention substantially and immediately cures, allowing the tank to be handled after its completion, while the fiberglass reinforced plastic jacket requires at least three hours. The present invention requires no manual rolling process, which can be automated and human-error free, and the jacket manufacturing process is healthy and not flammable, since it works with 100% solid products with no solvents, thereby preserving the health of the production employees, while the fiberglass reinforced plastic jacket manufacture makes it necessary to use breathing equipment and balanced exhausting systems to filter particulates and vapors. Still further, the present invention is environmentally safe, since no VOCs are issued into the atmosphere, and the tank is more easily produced, since the manufacturer of the polyurethane jacket requires only 20% of the time needed to manufacture the fiberglass plastic jacket. In summary, Mr. Costa believes that a great contribution in environmental occupational health terms evidences a substantial progress in the field by the present invention.

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Claims 2, 3 and 9 depend directly from and add further limitations to independent claim 1 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 1. Dependent claims 5-8 and 10 depend either directly or indirectly from and add further limitations to independent claim 4 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 4. Therefore, for all the above reasons, reconsideration of the rejections of claims 2, 3 and 5-10 is respectfully requested.

For all the foregoing reasons, Applicant believes that claims 1-10, as amended, are patentable over the prior art and are in condition for allowance. Reconsideration of the rejections and allowance of all pending claims 1-10 are respectfully requested.

Respectfully submitted,

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